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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,300	02/18/2004	Peter Satitpunwaycha	AMAT/8403/MASK/MASK-ETCH	4286

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EXAMINER
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DHINGRA, RAKESH KUMAR

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 07/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/782,300

Applicant(s)

SATITPUNWAYCHA ET AL.

Examiner

Rakesh K. Dhingra

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 05/05
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-19 have been considered but are moot in view of the new ground(s) of rejection as explained hereunder.

Applicant has amended independent claims 1, 10, 15 and dependent claims 11, 14, 16, 17, 19 and added new dependent claim 20.

New reference has been found (US Patent No. 6,284,093, Ke et al) that when combined with Tanaka et al and Satoh et al reads on claims 1,10,15 limitations. Accordingly claims 1,10,15 and dependent claims 2-9,11-14,16-19 have been rejected under 35 USC 103 (a) as explained below. Further, new dependent claim 20 has also been rejected under 35 USC 103 (a) as explained below.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not

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commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claims 1-3, 5, 6, 8, 10, 12-15, 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al (US Patent No. 5,688,358) in view of Satoh et al (US PG PUB No. 2002/0162630) and Ke et al (US patent No. 6,284,093).**

Regarding Claim 1-3: Tanaka et al teach a pedestal 10 (Figure 6), for supporting a wafer (substrate) 12 in a plasma etching chamber 14 comprising:

a body (comprising of conductive platen [body] 48, outer ring 54 and top ring 52), the conductive platen (part of body) 48 being configured to receive an RF power; and a substrate support base (comprising of top raised portion in the conductive platen and the top ring 52) along an upper surface of the body, the substrate support base having an outer edge (outer perimeter of top ring 52), and an intermediate substrate support; and wherein the top ring (at least a portion of the substrate support base outside of the intermediate substrate support portion) 52 is fabricated from quartz (dielectric material) [Column 5, lines 35-60 and Column 4, lines 20-55]. Tanaka et al also teach that conductive platen 48 (includes substrate support portion) is made of metal (aluminum/titanium) [Column 2, lines 65-67].

Tanaka et al do not teach intermediate substrate support ridge for receiving and supporting the substrate.

Satoh et al teach an apparatus (Figure1) that includes a ceramic base substance (substrate support base) 13 that has a slanting surface (like a ridge) for receiving and supporting a substrate 9 (Paragraphs 0030-0032).

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Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use substrate support base with a slant surface (ridge) as taught by Satoh et al in the apparatus of Tanaka et al to avoid warping of substrate (Paragraph 0009). Tanaka et al in view of Satoh et al do not teach at least a portion of substrate support base outside of the intermediate substrate support ridge fabricated from a dielectric material having a lower dielectric constant than a remaining portion of the substrate support base.

Ke et al teach a substrate support apparatus (Figures 2-6) that includes a cathode electrode 22 on which a workpiece 22 is supported, and which further includes a dielectric shield 30 with an inner dielectric shield portion 38 (like top ring 52 in Tanaka et al, Figure 6). Ke et al further teach that where an electrostatic chuck 52 (Figure 3) is used to hold the wafer, then to maintain a balance between RF power coupled through the wafer 22 and the RF power coupled through inner dielectric shield 38, the dielectric constant of the inner shield 38 should be lower than the dielectric constant of the electrostatic chuck (column 12, lines 10-25).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use a portion of substrate support base (outside the substrate support ridge) with dielectric constant lower than remaining portion of substrate support base as taught by Ke et al in the apparatus of Tanaka et al in view of Satoh et al (for example Figure 4 of Tanaka et al) to enable maintain desired level of RF coupling through the wafer and through the inner shield.

Regarding Claims 5, 8, 12, 17: Tanaka et al teach that top ring 52 is made from quartz (a ceramic material).

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Regarding Claims 6,14,19: Tanaka et al teach (Figure 6) that top ring 52 defines substantially the entire thickness of the substrate support base outside of the substrate support ridge.

Regarding Claims 10,13: Tanaka et al in view of Satoh et al and Ke et al teach all limitations of the claim as explained above including that the apparatus can perform etching on semiconductor wafer. Use of apparatus for supporting a reticle (instead of semiconductor substrate) is an intended use for which courts (Case law) have held as follows:

“Inclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims. *In re Young*, 75 F.2d 966, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)).”

Regarding Claims 15,18: Tanaka et al in view of Satoh et al and Ke et al teach all limitations of the claim as explained above including that the apparatus (Figure 6, Tanaka et al) comprises chamber body that includes side wall 26, base 28 and a dome 30 and a substrate (reticle) support member 10. Further, Satoh et al also teach that apparatus (Figure 1) includes a gate valve (gate) 18 for entry/exit of wafer from the chamber 2 (Satoh et al – Paragraph 0031).

**Claims 4, 7, 11, 16, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al (US Patent No. 5,688,358) in view of Satoh et al (US PG PUB No. 2002/0162630) and Ke et al (US patent No. 6,284,093) as applied to Claims 3, 6, 15 and further in view of and Martin (US patent No. 4,676,193).**

Regarding Claims 4,7,11,16,20: Tanaka et al in view of Satoh et al and Ke et al teach all limitations of the claims except material for substrate support ridge.

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Martin teaches an apparatus (Figures 1, 2) that includes a mask (reticle) supporting frame 34 that has a flange 36 with a ridge 38 on which mask (reticle) 40 is supported. Martin further teaches that frame (including ridge) 34 is made of stainless steel (Column 7, line 55 to Column 8, line 60).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use a metallic ridge for supporting substrate as taught by Martin in the apparatus of Tanaka et al in view of Satoh et al and Ke et al to minimize generation of particles due to reticle contacting only a small edge (ridge).

**Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al (US Patent No. 5,688,358) in view of Satoh et al (US PG PUB No. 2002/0162630) and Ke et al (US patent No. 6,284,093) as applied to Claim 1 and further in view of Uchino et al (EP Pub. No. EP 1115140).**

Regarding Claim 9: Tanaka et al in view of Satoh et al and Ke et al teach all limitations of the claim except cover.

Uchino et al teach an apparatus (Figure 1) that includes a substrate holder 120 that has a cover 150 that covers outer periphery of substrate holder 120 (Paragraphs 0023, 0024).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use substrate holder cover as taught by Uchino et al in the apparatus of Tanaka et al in view of Satoh et al and Ke et al to prevent deposition on the substrate holder.

### ***Conclusion***

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Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rakesh K. Dhingra whose telephone number is (571)-272-5959. The examiner can normally be reached on 8:30 -6:00 (Monday - Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571)-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Rakesh Dhingra



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